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Neuromodulation of Somatomotor, Somatosensory and pain Networks Using an MRI-compatible Brain Computer Interface

Dr. T. Dorina Papageorgiou obtained a BA in Psychology and Sociology (University of Georgia), a M.H.Sc. in Psychiatric Epidemiology (Johns Hopkins Bloomberg School of Public Health), and a Ph.D. in the Biomedical Sciences The (University of Texas - M.D. Anderson Cancer Center; MDACC) with a focus on human brain neuroimaging, specifically the effects of morphine in the pain matrix networks. She continued with three postdoctoral fellowships: (i) neuroimaging of cancer symptoms and its treatment (MDACC); (ii) cortical neuromodulation of speech using real-time functional MRI neurofeedback (Baylor College of Medicine; BCM); and (ii) cortical neuromodulation of visual perception in cortical blindness (BCM). As an Assistant Professor of Psychiatry, Neuroscience, Physical Medicine and Rehabilitation at BCM and Electrical and Computer Engineering, Neuroengineering, and Applied Physics at Rice University her lab's research focuses on the development and application of targeted, and individualized real-time fMRI neurofeedback methods to elucidate the mechanisms of cortical plasticity in health, and neuro-rehabilitate cortical blindness, speech impairment and, chronic pain syndromes following neurological disorders, traumatic brain injury or, cancer-related symptoms. The Papageorgiou - Investigational Targeted Brain Neurotherapeutics Lab has developed a novel, targeted and individualized MRIcompatible brain computer interface (BCI), individualized real-time functional MRI neurofeedback (iRTfMRI nFb), which is based on promoting the reorganization of networks by bypassing lesioned pathways and capitalizing on redundant, intact but functionally associated pathways to the injured ones. The Papageorgiou -Investigational Targeted Brain Neurotherapeutics Lab's research is funded by the McNair Medical Institute, the McNair Foundation, the TIRR Foundation, various other foundations, and NIH mechanisms. She is the Chief Editor of the internationally successful book "Advanced Brain Neuroimaging Topics in Health and Disease -Methods and Applications" (ISBN: 978-953-51-1203-7; DOI: 10.5772/58256: eBook(PDF) ISBN: 978-953-51-7209-3), which has been downloaded 40K times to date.